

## Why is PIK3CA mutation testing important?

### 1

PIK3CA mutations are common, occurring in almost 1 in 4 breast cancer patients.<sup>4</sup>

### 2

Mutations in the PIK3CA gene are related to poor clinical outcome.<sup>5-7</sup>

### 3

Personalized treatment is possible if PIK3CA mutations are present.<sup>8</sup> This is why testing for the mutations is important.

## Act early and get tested To see what lies beneath

Seek professional medical advice when in doubt.

#### References

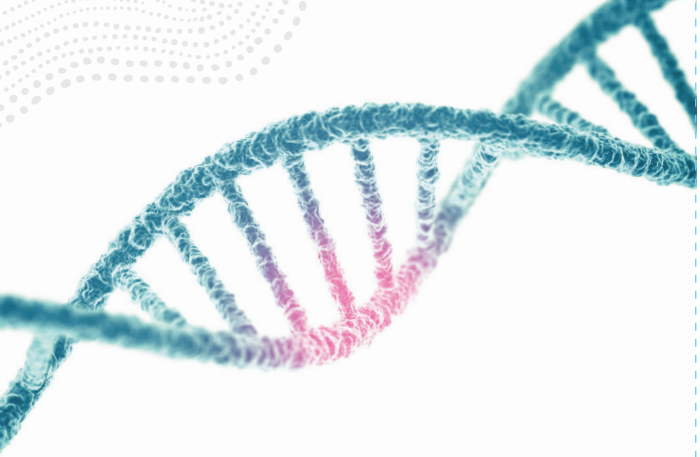
1 Whitman M, et al. Type I Phosphatidylinositol Kinase Makes a Novel Inositol Phospholipid, phosphatidylinositol-3-phosphate. *Nature* 1988;332:644-646. 2 Samuels Y, Waldman T. Oncogenic Mutations of PIK3CA in Human Cancers. *Curr Top Microbiol Immunol* 2010;347:21-41. 3 Seung SJ, et al. A population-based analysis of breast cancer incidence and survival by subtype in Ontario women. *Curr Oncol* 2020;27:e191-e198. 4 Loi S, et al. PIK3CA mutations associated with gene signature of low mTORC1 signaling and better outcomes in estrogen receptor-positive breast cancer. *Proc Natl Acad Sci U S A* 2010;107:10208-10213. 5 Brown KK, Toker A. The phosphoinositide 3-kinase pathway and therapy resistance in cancer. *F1000Prime Rep* 2015;7:13. 6 Miller TW, et al. Hyperactivation of phosphatidylinositol-3 kinase promotes escape from hormone dependence in estrogen receptor-positive human breast cancer. *J Clin Invest* 2010;120:2406-2413. 7 Fitzgerald DM, et al. Association between PIK3CA mutation status and development of brain metastases in HR+/HER2- metastatic breast cancer. *Ann Oncol* 2019;30:v110(suppl 5). 8 André F, et al. Alpelisib for PIK3CA-Mutated, Hormone Receptor-Positive Advanced Breast Cancer. *N Engl J Med* 2019;380:1929-1940. 9 Cancer Genome Atlas Network. Comprehensive Molecular Portraits of Human Breast Tumours. *Nature* 2012;490:61-70. 10 Van Poznak C, et al. Use of biomarkers to guide decisions on systemic therapy for women with metastatic breast cancer: American Society of Clinical Oncology clinical practice guideline. *J Clin Oncol* 2015;33:2695-2704. 11 Zhou Y, et al. Diagnostic Accuracy of PIK3CA Mutation Detection by Circulating Free DNA in Breast Cancer: A Meta-Analysis of Diagnostic Test Accuracy. *PLoS One* 2016;11:e0158143. 12 Cardoso F, et al. 5th ESO-ESMO international consensus guidelines for advanced breast cancer (ABC 5). *Ann Oncol* 2020;31:1623-1649.

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What is  
**PIK3CA** and  
why is it  
important to  
you?



## What is PIK3CA?

Discovered in the 1980s, *PIK3CA* is a gene that is involved in cell growth and death.<sup>1,2</sup>

*PIK3CA* is like a gas pedal of a moving car. When the gas pedal is jammed the car loses control. The *PIK3CA* mutation is like the jammed gas pedal. When it happens, cells grow uncontrollably, which can lead to cancer.<sup>2</sup>

Breast cancers are commonly categorized into three subtypes based on the status of hormone receptor (HR) and human epidermal growth factor receptor 2 (HER2).<sup>3</sup> Recently, scientists discovered that different **genetic mutations have a direct impact on patient outcomes. Among them is the mutation of the *PIK3CA* gene commonly found in HR+/HER2- advanced breast cancer\*.**

Not all breast cancers are the same. *PIK3CA* is an important gene that can impact the survival of patients with HR+/HER2- advanced breast cancer.<sup>2</sup>

### \*What is HR+/HER2- advanced breast cancer?

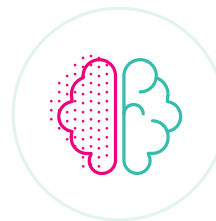
Hormone receptor positive (HR+) / human epidermal growth factor receptor 2-negative (HER2-) advanced breast cancer are Stage 3 and 4 breast cancer. Stage 3 breast cancer is cancer that has spread to other parts of the breast or nearby lymph nodes. Stage 4 is metastatic breast cancer, which means the cancer has spread to other parts of the body, such as the brain, liver, lungs or bones.

## What should you know about PIK3CA?



*PIK3CA* mutations are common genetic abnormalities in breast cancer. Almost **one in four patients** with breast cancer carry these mutations.<sup>4</sup>

Compared with those without the mutations, patients carrying the *PIK3CA* mutations respond poorer to chemotherapy and may develop resistance to hormone therapy.<sup>5,6</sup> There is also an increased **risk of the cancer spreading from the breast to the brain.**<sup>7</sup>



Testing for *PIK3CA* mutations can guide doctors to **develop a personalized treatment plan** for you.

Testing for *PIK3CA* mutations allows doctors to personalize treatment according to the individual patient.<sup>8</sup>

## Testing for PIK3CA mutations

### WHO?

*PIK3CA* mutations occur in approximately 40% of patients with HR+/HER2- advanced breast cancer.<sup>9</sup>

If you have been diagnosed with HR+/HER2- advanced breast cancer, it may be useful to discuss testing for *PIK3CA* mutations with your doctor.

### WHEN?

Testing is appropriate when patients with HR+/HER2- breast cancer are first diagnosed in the advanced stage or after initial treatment has stopped working.<sup>10</sup>

### HOW?



**Tissue biopsy** – a procedure where tissue samples are extracted from the tumor and tested for *PIK3CA* mutations.



**Liquid biopsy** – a test that looks for *PIK3CA* mutations in cancer cells or tumor DNA that are circulating in the blood.

Although liquid biopsy is non-invasive, there is a high chance of false-negative results.<sup>11</sup> International guidelines recommend additional testing with tissue biopsy even if the result of a liquid biopsy is negative.<sup>12</sup>

Testing for *PIK3CA* mutations is appropriate when patients with HR+/HER2- breast cancer are first diagnosed in the advanced stage or have progressed after initial treatment.